

IN THE CLAIMS

Please amend the claims as follows:

1 1 (Currently Amended). A photonic bandgap microcavity comprising:
2 a deformable membrane structure that can experience strain of at least 0.2% on
3 the deformable membrane; and
4 a photonic bandgap waveguide element formed on said deformable membrane
5 structure having a defect so that when said deformable membrane structure is strained,
6 said photonic bandgap waveguide element is tuned to a selective amount.

1 2 (Currently Amended). The photonic bandgap microcavity of claim 1, wherein said
2 deformable membrane structure comprises a sub-micron SiO₂ layer.

1 3 (Original). The photonic bandgap microcavity of claim 1, wherein said photonic
2 bandgap waveguide element comprises a 1-dimensional photonic crystal.

1 4 (Original). The photonic bandgap microcavity of claim 3, wherein said photonic
2 bandgap waveguide element comprises a plurality of periodic holes.

1 5 (Original). The photonic bandgap microcavity of claim 4, wherein said defect breaks
2 the periodicity of said periodic holes.

1 6 (Original). The photonic bandgap microcavity of claim 1, wherein said selective
2 amount comprises approximately 1%.

1 7 (Currently Amended). The photonic bandgap microcavity of claim 1 further
2 comprising at least one actuator that is coupled to said deformable membrane so as to
3 produce said strain.

1 8 (Currently Amended). The photonic bandgap microcavity of claim 7, wherein said at
2 least one actuator produces strain on said deformable membrane between 0.2 and 0.3%.

1 9 (Original). The photonic bandgap microcavity of claim 7, wherein said at least one
2 actuator comprises a top electrode.

1 10 (Original). The photonic bandgap microcavity of claim 9, wherein said at least one
2 actuator comprises a bottom electrode.

1 11 (Original). The photonic bandgap microcavity of claim 7, wherein said at least one
2 actuator comprises a PZT piezoelectric actuator.

1 12 (Currently Amended). A method of forming a photonic bandgap microcavity
2 comprising:

3 providing a deformable membrane structure that can experience strain of at least
4 0.2% on the deformable membrane; and

5 forming a photonic bandgap waveguide element on said deformable membrane
6 structure having a defect so that when said deformable membrane structure is strained,
7 said photonic bandgap waveguide element is tuned to a selective amount.

1 13 (Currently Amended). The method of claim 12, wherein said deformable membrane
2 structure comprises a sub-micron SiO₂ layer.

1 14 (Original). The method of claim 12, wherein said photonic bandgap waveguide
2 element comprises a 1-dimensional photonic crystal.

1 15 (Original). The method of claim 14, wherein said photonic bandgap waveguide
2 element comprises a plurality of periodic holes.

1 16 (Original). The method of claim 15, wherein said defect breaks the periodicity of said
2 periodic holes.

1 17 (Original). The method of claim 12, wherein said selective amount comprises
2 approximately 1%.

1 18 (Currently Amended). The method of claim 12 further comprising providing at least
2 one actuator that is coupled to said deformable membrane so as to produce said strain.

1 19 (Currently Amended). The method of claim 18, wherein said at least one actuator
2 produces strain on said deformable membrane between 0.2 and 0.3%.

1 20 (Previously Presented). The method of claim 18, wherein said at least one actuator
2 comprises a top electrode.

1 21 (Previously Presented). The method of claim 20, wherein said at least one actuator
2 comprises a bottom electrode.

1 22 (Previously Presented). The method of claim 18, wherein said at least one actuator
2 comprises a PZT piezoelectric actuator.